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CARDIAC FUNCTION AND HEART FAILURE

LABORATORY EVIDENCE OF CONGESTIVE HEPATOPATHY PREDICTS IMPROVEMENT IN RENAL FUNCTION DURING THE TREATMENT OF ACUTE DECOMPENSATED HEART FAILURE

ACC Poster Contributions
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Background: In animal models, experimentally induced venous congestion causes significant impairment of renal function which is reversible with relief of congestion. Similarly, venous congestion can affect the liver causing congestive hepatopathy with biochemical evidence of liver dysfunction in the form of elevated international normalized ratio (INR), bilirubin (BIL), and alkaline phosphatase (AP) levels. Given that the liver and kidneys share a common venous system, we hypothesized that laboratory evidence of congestive hepatopathy may also indicate congestion-induced renal dysfunction. As a result, diuresis of these patients should lead to improvement in renal function (IRF).

Methods: We reviewed consecutive admissions with a primary discharge diagnosis of heart failure, an admission B-type natriuretic peptide (BNP) level, and an INR, AP, or BIL level. A BIL or AP level >/=1.5 times the upper limit of normal and an INR >/=1.5 were considered elevated. IRF was defined as a >/=20% increase in glomerular filtration rate.

Results: Overall 871 admissions were identified, 798 with an INR and 525 with a BIL or AP level. INR was elevated in 36.1%, BIL in 14.7% and AP in 27.6% of admissions. Consistent with a congested state, patients with an elevated marker of congestive hepatopathy were significantly more likely to have absence of inferior vena cava inspiratory collapse (OR=3.1, $p<0.001$) or a BNP in the highest quartile (OR=2.0, $p<0.001$). IRF was significantly more common in patients with an elevated INR, AP, or BIL (OR=2.8, $p<0.0001$). Patients with an elevation in all three laboratory markers had the highest incidence of IRF (OR=3.4, $p=0.004$). Despite the weak association between BNP and IRF (OR=1.1 per 500 pg/mL, $p<0.001$), restricting the analysis to patients with a BNP above the median further strengthened the association between an elevated marker of congestive hepatopathy and IRF (OR=4.6, $p<0.001$). After controlling for BNP, an elevated INR, BIL, or AP remained a significant predictor of IRF (OR=2.6, $p<0.0001$).

Conclusions: Laboratory evidence of congestive hepatopathy is associated with IRF during diuresis, effects likely mediated via relief of venous congestion-induced renal dysfunction.